

ATTACHMENT 5

Summary Matrix of Integration Panel Recommendations for Focused Grants and Designated Actions and Draft Descriptions of Each Focused Grant and Designated Action

Additional Focused Grants, Designated Actions, and Proposals Recommended by the Integration Panel for 1998

Page	Subject	Type of Funding	Geographic Area	Primary Stressor	Funding Range: Low	Funding Range: High	General Description
1	Research Program - Fish Harvest	Grant	Landscape	Adverse Harvest Impacts	500,000	500,000	Research to refine estimates of harvest impacts on sensitive salmon population and to develop tools to decrease the effects of freshwater/ocean harvest on wild stock.
3	Research Program - Open Topics	Grant	Landscape	All	3,000,000	3,000,000	Topics may be of both applied and theoretical interest. Topics are unlimited except that there must be a distinct link to the ERPP. Funding of \$1m for each of three years.
4	Watershed Planning	Grant	Landscape	All	1,000,000	2,500,000	Development and implementation of restoration projects and plans by new or existing watershed groups.
5	Education	Grant	Landscape	All	300,000	300,000	Develop public education programs, restoration training programs, mentoring, internships, adopt-a-stream programs.
7	Gravel Restoration	Designated Action	Landscape	Channel Form Changes	0	500,000	Provide matching funds for the CVPIA gravel restoration program. Note that matching funds may have already been funded from Prop 204.
8	Small Diversion Fish Screens	Designated Action	Landscape	Entrainment	900,000	900,000	Funding for the NRCS small screen program. Must coordinate with local agencies/interest groups.
9	Research Program - Small Diversion Fish Screens	Grant	Landscape	Entrainment	100,000	100,000	Research to determine the biological benefit of screening small diversions.
10	Fish Passage Assessment	Grant	Landscape	Entrainment	500,000	1,000,000	Develop a list of dams which are candidates for removal. Include a concurrent evaluation of fish passage problems at these dams.
11	Fish Passage	Grant	Landscape	Entrainment	3,000,000	5,000,000	Fish passage actions. Projects must be located in areas where high quality habitat will be made accessible to high priority fish species.
12	Research Program - Alternatives to Fish Screens	Grant	Landscape	Entrainment	500,000	500,000	Research to develop an array of techniques, other than fish screens, to reduce fish entrainment at diversions.

Additional Focused Grants, Designated Actions, and Proposals Recommended by the Integration Panel for 1998

13	Floodplain Acquisition	Grant	Landscape	Floodplain Changes	12,000,000	12,000,000	Use the 1997 priorities to acquire fee title or permanent easement for lands within the floodplains of the major rivers or their tributaries.
14	Habitat Restoration in Flood Control Bypasses	Grant	Sacramento Mainstem	Floodplain Changes	1,200,000	1,200,000	Feasibility analysis to study the opportunity to improving existing habitats, eliminating fish passage barriers, reducing entrainment, and developing wildlife/fishery compatible levee maintenance within flood control bypasses.
15	Habitat Restoration Demonstration Projects	Grant	Landscape	Floodplain/ Marshplain Changes	2,000,000	2,000,000	Habitat restoration and/or creation demonstration projects. May include restoration projects recently funded by Category III. Must be in locations accessible to the public.
16	Fish Hatchery Review	Grant	Landscape	Population Management/ Artificial Propagation	250,000	250,000	Planning study to design a comprehensive plan to review operations at the five hatcheries on the American, Merced, Mokelumne, Sacramento, and Feather Rivers.
17	Research Program - Selected Species Life History Studies	Grant	Landscape	Population Management/ Artificial Propagation	600,000	600,000	Research, including field data and models, to complete life history studies on green sturgeon, steelhead, and spring run salmon. Emphasis on techniques to use for restoration of these species.
18	Research Program - Introduced Species	Grant	Delta	Undesirable Species Interactions	1,250,000	1,250,000	Develop an inventory, determine ecological effects, and develop permanent control efforts for introduced species in the Bay Delta.
20	Impacts of Pesticides on Aquatic Invertebrates in the Delta	Designated Action first, then Grant	Landscape	Water Quality	1,500,000	1,500,000	Determine ecological impact of pesticides on invertebrates. The IEP will be asked to design the monitoring program and then a grant process will be used to select the entity to complete the work.
22	Baseline Pesticide Monitoring	Designated Action first, then Grant	Landscape	Water Quality	500,000	500,000	Identify water bodies most at risk from pesticide exposure. The IEP will be asked to design the monitoring program and then a grant process will be used to select the entity to implement the work.

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24	Fathead Minnow Toxicity in the Sacramento River	Designated Action first, then Grant	Sacramento Mainstem	Water Quality	400,000	400,000	Determine cause of observed toxicity to fathead minnows in the Sacramento River. The Regional Board will be asked to design the research and then a grant process will be used to select the entity to implement the program.
25	Algal Toxicity	Designated Action first, then Grant	Landscape	Water Quality	500,000	500,000	Determine cause of observed algal toxicity in agricultural and urban drainages on Sac River, SJ River and Delta. The Regional Board will be asked to design the research and then a grant process will be used to select the entity to implement the program.
26	Water Quality Criteria for Chlorpyrifos and Diazinon	Designated Action	Landscape	Water Quality	100,000	100,000	Complete the four toxicity tests needed to fill data gaps and then calculate final criteria. The DFG will be asked to complete the work.
27	Chronic Fish Impairment Studies	Designated Action first, then Grant	Delta	Water Quality	700,000	700,000	Monitoring/research study to evaluate direct chronic impacts of contaminants on important Delta fish species. The IEP will be asked to design the program and then the grant process will be used to select an entity to carry out the work.
28	Integrated Pest Management in Suisun Bay	Proposal	Suisun Bay	Water Quality	266,000	266,000	Fund proposal B236. The project builds on an on-going pilot project to reduce pesticide concentrations in the urban runoff which is discharged into the Suisun Bay.
31	Sediment Reuse and Toxicity Criteria	Designated Action first, then Grant	Delta	Water Quality	500,000	500,000	Research to determine if Delta sediment is toxic to the aquatic ecosystem and to find beneficial reuse options. The Delta Levees and Habitat Comm. will be asked to design the research then a grant process will be used to select entities to do the work.
32	Water Acquisition	Designated Action	Landscape	Hydrograph Alteration	20,000,000	20,000,000	Water acquisition for environmental restoration purposes.
				TOTAL FUNDED:	51,566,000	56,066,000	

Focused Grant

Subject: Research Program - Fish Harvest

Background: There is a need to develop fisheries management tools to minimize the impacts of recreational and commercial harvest on wild anadromous fish stocks where they have experienced severe declines. These tools would not only assist in the recovery of the fish stocks but could help maintain viable commercial and recreational fishing industries by reducing the conflict.

The harvest of hatchery-derived chinook salmon is constrained by the need to limit the harvest mortality of the sensitive wild stocks mixed with them. More selective fisheries targeting hatchery-derived fish would result in higher harvests and less mortality of wild stocks. Mass-marking of hatchery fish may allow selective harvest of hatchery fish. However, because wild fish mix with hatchery fish, fishermen are likely to hook wild fish in their pursuit of hatchery fish. If the proportion of a particular run of salmon (e.g., winter run) is very low, individual fish could potentially get hooked repeatedly and suffer mortality as a result. Information related to the estimated hooking mortality in both the commercial fishery and in the freshwater and saltwater recreational fishery is needed to evaluate the potential effects of mass-marking. Techniques to minimize hooking mortality can also be effective tools to reduce any effects that may be identified with mass-marking.

Selectivity in salmon fisheries to minimize impacts on sensitive stocks can be increased in a number of ways. Some examples are development of better information on locations of sensitive stocks to more effectively target harvest, and evaluation of different harvest techniques to determine if they increase selectivity through innovation.

Proposed Action: A focused grant to develop fisheries management tools to decrease the effects of commercial and recreational harvest on sensitive stocks while maintaining the important industries supported by harvest. These tools could include research to refine the estimates of harvest impacts on sensitive salmon populations and to allow calculation of a fall run harvest rate, as well as research to estimate hooking mortality of wild salmon stocks as a result of both the commercial and recreational fisheries in marine, estuarine, and freshwater if hatchery fish are mass-marked. The results can be used to find ways to meet performance standards for commercial and sport salmon fisheries consistent with ecosystem restoration and with sustainable fishery goals (e.g., maximum allowable harvest impact on sensitive stocks such as winter run and spring run chinook salmon). Additional tagging and/or marking is not contemplated as part of this proposal.

Geographic Area: Throughout the entire Sacramento-San Joaquin Delta system, as well as distant fisheries in which salmon originating in the Bay-Delta are caught.

Recommended Funding: \$500,000.

Coordination: CALFED staff should coordinate this proposal with the applicable regulatory agencies (NMFS and CDFG) before advertising the focused grant.

Additional information: Proposals should be evaluated for funding based on the Integration Panel's 1997 priority species and on the likelihood of ecological benefit (specifically, increased selectivity and reduced harvest impacts on sensitive stocks).

4 February 1998
RP-HARVE.WPD

Subject: Research Program - Open Topics

Background: CALFED has made a commitment to implement ecosystem restoration through adaptive management. This commitment recognizes that there are important scientific questions that remain to be answered about the ecological processes and functions of the Bay-Delta system. In many cases, these questions must be evaluated to increase the effectiveness of ecosystem restoration actions and to focus funding and effort to the highest priority areas. To promote rigorous scientific evaluation of these questions, there is a need to seek innovative scientific research as related to the Bay-Delta ecosystem. Any scientific research should be rigorously peer reviewed, the hypothesis clearly stated, the methods documented, and the results broadly disseminated.

Proposed Action: Develop an open research program. This program could use a similar program, the Research Enhancement Program, as a model. The Research Enhancement Program was managed by the Interagency Ecological Task Force and resulted in the type of rigorous research programs which answered important scientific questions. Proposals may be submitted on any topic of interest within the Bay-Delta ecosystem; the only constraint is that a direct link must be shown to the Ecosystem Restoration Program Plan. A strong scientific peer review process will be used to evaluate the proposals for funding and then to evaluate the results of the research projects.

Geographic Area: Anywhere within the Sacramento-San Joaquin Delta system.

Recommended Funding: \$1,000,000 per year for three years.

Coordination: Use the old Research Enhancement Program RFP as a model for this focused grant.

4 February 1998
RP-OPEN.WPD

Subject: Watershed Planning

Background: In several important tributaries and watersheds, there is a need for long-term restoration planning to develop restoration projects to be implemented. In areas where locally based planning efforts have identified restoration projects, there appears to be a greater public acceptance because the projects can be seen in context and have been designed in a cooperative manner. These locally-led planning processes should include participation by a diverse stakeholder group (with balanced representation from federal, state, and local levels) to serve as a filter for the many existing restoration and mitigation programs and to increase coordination of activity in the watershed.

For downstream issues, different tributaries can contribute different solutions. Without coordination among these tributaries, local watershed planning might prove fragmented or inadequate to meet valley-wide or landscape-level needs.

Proposed Action: Promote locally-led efforts to develop comprehensive restoration plans for key tributaries of the Central Valley and Bay-Delta watershed. Fund the development and implementation of restoration projects or plans by new or existing watershed groups.

Geographic Area: Important tributaries of the Sacramento River and San Joaquin River.

Recommend Funding: Funding should range from \$1,000,000 to \$2,500,000.

Coordination: Work with county planning departments and commissions, local resource conservation and irrigation districts, local environmental groups, landowners, and other important interests to build support for comprehensive planning supported by diverse and balanced interests.

3 February 1998
WTRSHED.WPD

Subject: Education

Background: Building support and understanding of the need for restoration of the ecosystem is critical to the success of these efforts. Many of the concepts in habitat restoration are new and innovative, and the public needs to understand them before they will support these new ideas. An education program would help the public understand the problems, would highlight the need to protect and restore the ecosystem, and would increase the acceptance of innovative restoration techniques. Education efforts need to be simple, understandable, and make a personal connection. This may cause individuals, and ultimately communities, to become active participants in local protection and/or restoration efforts. Should this end result be achieved, it will improve CALFED's interactions with communities and local watershed groups.

There are several types of appropriate educational activities:

1. Mass media tools such as billboards, radio and television advertisements, exhibits at museums and public offices, and newspaper ads all reach a broad segment of the general population. A general public education program could be developed using these tools.
2. Adopt-a-Stream programs provide opportunities for local citizens and communities to get involved in protecting and enhancing local natural resources. Not only do these programs provide great educational benefits to both children and adults, they also provide an understanding of the resource management decisions faced by the agencies. Adopt-a-Stream programs may evolve into watershed conservancies if given the financial resources and encouragement to do so.
3. There may be a shortage of well-qualified personnel available to work at the grass roots level to implement the many restoration projects funded through Category III or identified as part of CALFED's Ecosystem Restoration Program Plan. In many cases, the actual restoration work is envisioned to be completed by non-agency personnel. In order to develop a well-qualified workforce, it is appropriate to develop and implement a training program targeted at habitat restoration technicians who will work with local groups and conservancies.
4. As the ecosystem restoration field continues to grow, there will be a need to recruit skilled high school and college graduates. Hands-on experience through internships and mentoring programs will provide these students with an insight into this type of work and help guide their career choice. Internship and mentoring programs may be overseen by federal or state resource agencies, non-profit groups, or local agencies such as Resource Conservation Districts.

Proposed Action: Provide a focused grant for educational programs related to the Bay-Delta ecosystem. Appropriate types of educational programs include mass media, Adopt-a-Stream, habitat restoration training, internships, and mentoring.

Geographic Area: Throughout the Sacramento River watershed, San Joaquin River watershed, Delta, Suisun Bay, and North Delta.

Recommended Funding: \$300,000

Coordination: A criterion for selecting proposals to be funded is that they include coordination with any local conservancy, public education group, or environmental group which has existing public education programs in place. It is also appropriate to coordinate with the programs of the Sacramento River Discovery Center and Delta Science Center. This funding is not intended to duplicate existing programs, but to fill in the gaps.

4 February 1998
EDUCATIO.WPD

Designated Action

Subject: Gravel Restoration

Background: Dams have interrupted the natural alluvial sediment transport processes and therefore negatively impacted both river channel morphology and the aquatic habitat available to native species. In some cases, rivers have responded to this lack of sustainable coarse-sediment supply with channel incision and bed-surface coarsening. In other cases, lack of channel forming flows have allowed increased amount of fine materials to be deposited. Both actions reduce the quantity and quality of spawning habitat available to native anadromous fish species and reduces food chain (e.g., benthic macroinvertebrate) production.

In addition, sediment transport continuity has been interrupted in some areas due to the impacts of instream and floodplain aggregate and gold mining. Past mining activities have left large instream and floodplain pits which act as sediment traps during gravel transport events. Gravels slowly accumulate in the pits, and because these gravels are not transported through these reaches, the bed surface downstream coarsens and/or incises.

Proposed Action: Identify opportunities to cost share on projects to replace gravel in areas where natural sediment deposition process have been interrupted and aquatic habitats have degraded. Focus on cost-sharing with CVPIA.

Geographic Area: Throughout the Sacramento-San Joaquin Delta system.

Recommended Funding: Up to \$500,000.

Coordination: Currently, the state and federal governments are developing task orders regarding the state's cost share requirement on gravel replacement projects on CVP streams. Category III funds could cost share on both CVP and non-CVP streams and need to be coordinated with funding for the state's CVPIA cost share.

4 February 1998
GRAVEL.WPD

Subject: Small Diversion Fish Screens

Background: Current state and federal efforts to screen diversions have been aimed at the larger diversions on the Sacramento River, San Joaquin River, and Bay Delta because these larger diversions are higher priority. However, it has been recognized that smaller diversions also have the potential to entrain juvenile fish and need to be addressed. As these efforts shift to screening of these smaller diversions (including hatchery, municipal, and agricultural water supply intakes), there is a need for a coordinated effort which is accessible at the local level.

Proposed Action: The Natural Resources Conservation Service (NRCS) oversees an existing small screen diversion program. The Integration Panel recommends allocating \$900,000 to the NRCS for additional prioritization and screening of small diversions. The NRCS would be directed to work in close coordination with any local screening programs.

Geographic Area: Throughout the Sacramento-San Joaquin Delta system, including tributaries.

Recommended Funding: \$900,000 to the Natural Resources Conservation Service (NRCS).

Coordination: The NRCS will be asked to work in cooperation with the USBR, NMFS, USFWS, CDWR, CDFG, Family Water Alliance, Coleman National Fish Hatchery, and local watershed conservancies, landowners and water districts.

2 February 1998
SML_SCRN.WPD

Subject: Research Program - Small Diversion Fish Screens

Background: There are a large number of relatively small diversions diverting water from the Sacramento and San Joaquin rivers and their tributaries. These smaller diversions have the potential to entrain juvenile fish but there is relatively little data that can be used to identify where the biological benefits would be greatest in a program to screen smaller diversions. Field research is needed to assist in prioritizing small diversions for screening.

Proposed Action: A focused grant will be awarded for a research project to determine the biological impacts of screening small diversions through an evaluation of entrainment potential at several locations. This could include a comparison of entrainment at several locations through field sampling. There are also locations where it would be possible to evaluate a screened and an unscreened diversion. The proposals should document how locations are to be compared, number of locations to be evaluated, methods and techniques to be used to evaluate results. The proposals should also document how the results could be used to develop a method to assign priority to small unscreened diversions.

Geographic Area: Throughout the Sacramento-San Joaquin Delta system, including tributaries.

Recommended Funding: \$100,000

Coordination: The applicant may wish to coordinate or consult with the USBR, NMFS, USFWS, CDWR, CDFG, Family Water Alliance, Coleman National Fish Hatchery, and local watershed conservancies, landowners and water districts. The applicant must have permission from the owner of any diversion where they propose to sample.

2 February 1998
RP-SCREE.WPD

Subject: Fish Passage Assessment

Background: In many areas, high quality aquatic habitat exists upstream of small agricultural diversions and power generation facilities located on tributaries of the Sacramento and San Joaquin Rivers. These diversion structures and dams block fish passage, can adversely impact downstream migration, and alter flow patterns. They may restrict natural sediment transport processes which can result in channel incision and other adverse geomorphological changes. Although some diversions include fish passage facilities, these are not always effective and do not address sediment transport issues.

Removal of these diversion dams can provide unimpeded fish passage to upstream anadromous fish habitat and can improve downstream migration for juveniles. Natural sediment transport can also resume. In addition to removal of dams, there may be other alternatives such as consolidation of existing structures to also reduce the number of fish passage facilities needed and may provide more ecological benefits than retaining all structures with traditional fish ladder and screening solutions.

In addition to fish passage problems at diversion dams, there are some areas where changes to the stream channel have caused fish passage concerns. Opportunities exist to reduce fish migration delays, stranding and straying resulting from these fish passage problems through mechanical manipulation coupled with instream flow management.

Proposed Action: Convene a workgroup of experts to work with local efforts to conduct the assessments necessary to identify small diversion dams which are appropriate for removal or consolidation, and small diversion dams which need to be replaced or modified with fish-friendly structures. In evaluating a structure, there should be some assessment of cost-effectiveness, ecological considerations such as the type of upstream habitat, and other factors such as water conservation and non-structural flood management. These experts would need to be able to properly balance quantitative cost-benefit analyses with non-quantifiable costs and benefits.

Geographic Area: Throughout the Sacramento-San Joaquin Delta system.

Recommended Funding: \$500,000 to \$1,000,000

Coordination: The workgroup needs to include representatives from agencies such as ACOE, Bureau of Reclamation, and NMFS; environmental groups, local watershed groups, irrigation districts, power companies, dam operators, and dam owners.

4 February 1998
FSH_ASMT.WPD

Subject: Fish Passage

Background: In many areas, high quality aquatic habitat exists upstream of small agricultural diversions and power generation facilities located on tributaries of the Sacramento and San Joaquin Rivers. These diversion structures and dams block fish passage, can adversely impact downstream migration, and alter flow patterns. They may restrict natural sediment transport processes which can result in channel incision and other adverse geomorphological changes. Although some diversions include fish passage facilities, these are not always effective and do not address sediment transport issues.

Removal of these diversion dams can provide unimpeded fish passage to upstream anadromous fish habitat and can improve downstream migration for juveniles. It can also provide access to high quality upstream habitat. In some cases, complete removal may not be possible, but there may be options such as consolidation of existing structures, which will reduce the number of fish passage facilities and possibly provide more ecological benefits than the traditional fish ladder and screening solutions at each dam. In some cases, removal or consolidation may not be possible, in which case fish passage and screening facilities may need to be constructed or retrofitted to effectively allow adult fish to pass.

Proposed Action: Fund projects to identify and implement solutions that address fish passage stressors. These projects can include consolidation of diversions, removal of dams, removal of instream obstructions, implementation of "fish friendly" dam operations, and construction of fish screens and ladders if no other solution can be implemented.

Geographic Area: Throughout the Sacramento-San Joaquin Delta system in areas where high quality habitat will be made accessible to high priority species.

Recommended Funding: \$3,000,000 to \$5,000,000

Coordination: Efforts should be coordinated with any group set up under the "Fish Passage Assessment" Focused Grant, with entities which own or operate diversions, with local conservancies or watershed groups, and with the state and federal agencies involved in fish passage issues including CDFG, CDWR, USBR, USFWS, NMFS, and FERC.

Criteria for evaluation: Priority will be given to projects that (a) include a thorough evaluation of all alternatives to improve fish passage, (b) provide an important ecological benefit, (c) address multiple high priority stressors within a particular watershed, (d) make previously inaccessible, high quality habitat accessible to fishes native to that habitat (projects aimed at introducing non-native populations into habitats in which they are unlikely to have existed historically will not be considered), (e) remove (rather than modify) man-made barriers (f) are practical, (g) evaluate costs and benefits of dam removal comprehensively (including costs and benefits that may not be quantifiable, or not easily quantifiable), and (h) are coordinated with watershed restoration plans and watershed groups.

4 February 1998
FISH_PSG.WPD

Subject: Research Program - Alternatives to Fish Screens

Background: Entrainment of juvenile fish at diversions has long been identified as a problem. The most effective means of preventing entrainment is to screen the diversion with a modern fish screen. Evaluations of alternative methods of preventing entrainment at larger diversions have not identified any effective solutions other than positive fish screens. However, when evaluating screening at smaller diversions under 25 cfs, there may be other techniques for preventing entrainment that could be cost effective in some situations.

Examples of options other than fish screens which could be evaluated include a change in diversion depths or a change in the distance of the diversion from the channel edge.

Proposed Action: Fund a research program to (a) develop an array of techniques, other than fish screens, which are expected to reduce entrainment and (b) test these new techniques in one watershed to assess their relative usefulness.

Geographic Area: The developed techniques will have application throughout the Sacramento-San Joaquin Delta system. The watershed selected for testing must have many diversions and a sufficient length to allow multiple test areas.

Recommended Funding: \$500,000

Coordination: This research program must be coordinated with "Research Program - Small Diversion Fish Screens." Input should be sought from groups involved in fish screening issues such as the Fish Facilities Team, the CVPIA's Anadromous Fish Screen Program, the Interagency Ecological Program's Agricultural Diversion PWT, local Resource Conservation Districts, and local watershed groups.

3 February 1998
RP-ALTER.WPD

Subject: Floodplain Acquisition

Background: Encroachment by agricultural and urban development has restricted floodplains which can lead to reduced riparian habitat and loss of shaded riverine aquatic habitat. In some cases, the landowners in the flood plain also face repeated flooding of their land with the resulting loss of agricultural revenue and loss of property. Opportunities now exist on many rivers which were heavily flooded in January 1997 to expand floodways and riparian corridors, thus providing greater flood management flexibility and concurrently benefitting the ecosystem. Many of these timely opportunities have been identified by the USDA/NRCS during their response to the January 1997 floods.

Proposed Action: Use the Integration Panel's 1997 priorities to identify and acquire (through fee title or permanent easement) lands within the floodplains of the major rivers or their tributaries. A particular emphasis will be placed on the lands flooded in January 1997.

Geographic Area: Throughout the entire Sacramento-San Joaquin Delta system, including tributaries.

Recommended Funding: \$12,000,000

Coordination: Work with local landowners through USDA/NRCS state and regional staff to identify and provide matching funds for Wetlands Reserve Program projects submitted for review after the January 1997 flooding, which were not funded based on limited funding. The US Army Corps and State Reclamation Board should be involved, particularly given their interest in the San Joaquin Valley and flood management

3 February 1998
FLOODPLN.WPD.

Subject: Habitat Restoration in Flood Control Bypasses

Background: One method of increasing the interaction of rivers with their floodplains is to fully utilize the existing flood bypass system in the Sacramento Valley, consistent with their role in flood management. For example, the Yolo Bypass provides habitat for a variety of aquatic, terrestrial, and plant species, yet has only seasonal connections to the mainstem Sacramento River and Delta. Flood bypasses can provide a myriad of ecological benefits, including nutrients to the upper Delta, important seasonal habitat for splittail, rearing and migration habitat for anadromous fish, and seasonal wetland habitat for waterfowl and shorebirds.

However, the configuration and use of the existing bypasses limit their ecological contribution to the health of the Delta due to the need to maintain flood flow capacity and the ability to strand juvenile fish with flood flows recede.

Proposed Action: The proposed action is to fund a two-year needs and opportunity analysis of improving habitats within the existing bypasses and to provide a means to maintain year-round connectivity with the Sacramento River and North Delta. Elements to be evaluated would include planning activities to (a) improve existing habitats, (b) improve streamflows in the bypasses and their associated sloughs (c) improve wetland, riparian, slough, agricultural and shaded riverine aquatic habitats, (d) eliminate fish passage barriers, (e) reduce fish entrainment and stranding, and (f) develop wildlife- and fisheries-friendly levee maintenance programs. The proposed action should identify potential conflicts with existing or future flood control needs in the bypasses.

Geographic Area: Sacramento Mainstem

Recommended Funding: 1,200,000

Coordination: This work would require coordination between numerous state, federal and local agencies as well as environmental groups and local agricultural interests. It should also be integrated with the previous Category III project which is evaluating fisheries use in the Yolo Bypass.

4 February 1998
HAB_FLOD.WPD

Subject: Habitat Restoration Demonstration Projects

Background: Many of the habitat restoration actions being developed as part of the ecosystem restoration efforts focus on use of natural processes and so are beyond what many members of the public think of as habitat restoration. Projects such as setback levees, restoration of river channel meanders, and other such efforts require local cooperation and understanding if implementation is to be successful. There is also a need to increase the technical understanding of these management and restoration tools. Habitat restoration demonstration projects may be used as an educational and experimental tool for the restoration and/or creation of different habitat types. Creation of habitat links directly to CALFED's Ecosystem Restoration Program Plan, which contains goals of restoring thousands of acres of wetland and riparian habitat. Restoration demonstration projects would be especially appropriate on streams and rivers where priority species are known to benefit from a particular type of habitat.

Proposed Action: Fund habitat restoration and/or creation demonstration projects in different parts of the watershed. This may also include funding an interpretive element of habitat restoration projects which have been approved through the 1997 CALFED Category III process. The demonstration projects must show habitat needs, values, and opportunities for restoration, and must be located in areas which are accessible to the public. These efforts should include local landowner cooperation to allow controlled public access to the interpretive site.

Geographic Area: Throughout the entire Sacramento-San Joaquin Delta system.

Recommended Funding: \$2,000,000

Coordination: Coordination is needed between the project proponent and local landowners, especially on adjacent parcels, conservancies, and resource agencies. The project proponent also needs to advertise the educational and interpretive opportunities which will be made available.

4 February 1998
HAB_DEMO.WPD

Subject: Fish Hatchery Review

Background: The ultimate goal of ecosystem restoration should be self-sustaining populations of organisms, at levels that provide a buffer against the risk of extinction. While fish hatchery production may be needed to rescue dwindling stocks at very low population levels, and while production hatcheries may be deemed necessary to support fisheries while restoration is occurring, the potential adverse impacts of hatcheries on wild stocks must be reasonably balanced against their benefits.

Proposed Action: Complete a comprehensive review of current hatchery goals and operations, with a focus on their impact on wild stocks. The review should encompass the goals, operation plans, objectives, potential sunset clauses, release protocols, release timing, release location, efforts to protect genetic integrity of different stocks, identification of fish stocks, and modification of operations to prevent straying and stranding. In addition, short-term actions to reduce the adverse impacts of hatcheries should be developed. The review shall encompass both salmon and steelhead stocks.

Geographic Area: The review should include the five major anadromous hatcheries on the American, Merced, Mokelumne, Sacramento, and Feather Rivers:

Recommended Funding: \$250,000

Coordination: CDFG, Genetic Review Committee, NMFS, NFWF, hatchery owners and operators, PCFFA.

4 February 1998
HATCHERY.WPD

Subject: Research Program - Selected Species Life History Studies

Background: In order to identify key stressors on these populations, additional information is needed about the life histories of green sturgeon, steelhead, and spring-run chinook salmon. This information is also necessary before successful restoration programs can be designed or implemented to benefit these species.

Proposed Action: Fund a research program to identify key habitat needs and stressors on each life history stage of green sturgeon, steelhead, and spring-run chinook salmon. The research is to include field data and models for the purpose of restoring these species. Specific proposals will be requested for each of the three species.

Geographic Area: Throughout the entire Sacramento-San Joaquin Delta system.

Recommended Funding: \$600,000

Coordination: This will be an open solicitation for proposals.

4 February 1998
RP-LIFE.WPD

Subject: Research Program - Introduced Species

Background: The Sacramento-San Joaquin Bay-Delta Estuary has been described by aquatic scientists as a heavily invaded ecosystem, the result both of accidental and intentional introductions of exotic, non-native aquatic species. The species range from microscopic plankton to macro faunal fishes, from macrophytes to rooted aquatic plants to terrestrial flora. Collectively, introduced species have been associated with both adverse and beneficial social, economic and environmental effects.

Proposed Action: Fund a research program to (a) develop an inventory report, (b) determine the ecological effects, and (c) develop and implement permanent control measures for introduced species within the Bay Delta Estuary. Research shall be conducted on both aquatic and terrestrial introduced species.

The inventory and ecological effects section should include (1) a description of the specific region(s) inhabited by each introduced species, including past, present and anticipated future distribution, (2) a history of the introduction (i.e. date, source and, if applicable, purpose of introduction) of each exotic species, (3) the past, present and anticipated future environmental consequence (in terms of predation, competition, disease, hybridization, etc.) of each species introduction on specific native species and/or species guilds, (4) the past, present and anticipated future economic and social consequence of each introduced species

The research program should also include the development of an overall strategy that addresses a range of responses to the current and anticipated future presence of introduced species, and which will: identify specific introductions which warrant remedial control measures, provide justification for taking action, describe remedial control measure(s) in terms of specific actions, staff and special equipment required, duration of activity, cost of the measure(s), the probability of accomplishing the intended goal of each measure, and a prioritized sequential implementation of control measures. Specific control measures will also be funded.

Geographic Area: The primary emphasis of this proposal is directed at the Sacramento-San Joaquin Bay-Delta Estuary. Introduced species in the Sacramento and San Joaquin River mainstems and their tributary streams may also be addressed, but to a lesser degree.

Recommended Funding: \$1,250,000

Coordination: This will be an open solicitation for proposals. The Principal Investigators should utilize existing information from standard scientific publications and from non-standard published and unpublished documents, including administrative reports, manuscripts, agency/educational institution report series, file material, etc. Personnel involved as managers, regulators, users and investigators of aquatic resources and who have access to relevant data on

introduced species should be enlisted for coordination in the preparation of the proposal report. Candidate entities include DFG, DWR, USFWS, Reclamation, SFEI, ACOE, EPA, SWRCB, RWQCBs, University of California, California state colleges, private colleges, water districts, etc. The Exotic Species group shall also be consulted.

4 February 1998
RP-SPECI.WPD

Subject: Impacts of Pesticides on Aquatic Invertebrates Within the Delta

Background: Water samples collected in the Sacramento River, San Joaquin River, the Delta and major tributaries frequently test toxic in standard U.S. EPA three species bioassays. Toxicity identification evaluations (TIEs) and chemical analysis often implicate the pesticides diazinon and chlorpyrifos as the primary cause of acute toxicity to the invertebrate test species (*Ceriodaphnia dubia*), while chemical monitoring and transport studies have confirmed the frequent presence of these two compounds. Sources appear to be from both urban and agricultural applications. Instream concentrations are frequently above the various criteria to protect aquatic life, as developed by the National Academy of Science, Great Lakes Research Council, and California Department of Fish and Game. Values of diazinon and chlorpyrifos are also greater than concentrations reported in the literature to be lethal to sensitive aquatic invertebrates including species present in the Central Valley and Delta.

Other pesticides (for example, carbofuan) have been detected at levels that test toxic to the invertebrate test species. Invertebrate toxicity cannot always be completely explained by the pesticides that are monitored. This is not unreasonable, since only half of the most commonly used pesticides have analytical methods that allow testing at ecologically significant levels.

No information is available on the impact of pesticides on local invertebrate communities. However, Novartis, the registrant for diazinon, has recently completed a probabilistic risk assessment and concluded that a combination of pesticides causes acutely toxic conditions to 10% of the most sensitive species about 30% of the time in the mainstem San Joaquin River. The study recommends that the population dynamics of susceptible invertebrate species in the basin be evaluated along with the feeding habits and nutritional requirements of common species. Because invertebrates form a vital link in the food chain, this type of study would help determine the ecological significance of the observed elevated pesticide levels found in the Delta and the rivers tributary to it.

Proposed Action: The Interagency Ecological Program's Contaminant Effects Group was formed at the request of Agency Directors; its mission is to acquire and disseminate information on the effects of contaminants on aquatic resources in the Central Valley and Estuary. The Contaminant Effects Group will be asked to develop a study plan to determine the ecological impact of pesticides on aquatic invertebrate communities in the mainstem San Joaquin River, mainstem Sacramento River, and Delta. These studies should determine the times, locations, and types of organisms most at risk, changes in the abundance and distribution of key invertebrates, the time necessary for population recovery, and whether changes in available invertebrate food resources affect the growth or survival of any priority fish species. Once the study has been designed by the Contaminant Effects Group, CALFED will use a focused grant program to determine the entity/entities which will conduct the work.

Geographic Area: Sacramento River, San Joaquin River, Delta.

Recommended Funding: \$1,500,000

Coordination/Overlap with Existing Studies: As previously mentioned, there are no ongoing or planned studies to determine the impact of pesticides on Delta invertebrates. We are proposing to fill gaps in the general knowledge of this subject.

Related water quality/pesticide studies include: (a) a 1997 CALFED Category III funded proposal to determine the impact of contaminants on Delta smelt, (b) a USGS study, supported by the Contaminant Effects Group, to correlate herbicide levels in Delta water with primary production and algal species abundance, (c) a Contaminant Effects Group sponsored study to evaluate the toxicity of Suisun Bay water to a local invertebrate and fish, (d) a Contaminant Effects Group sponsored study to look at the potential impacts of the fungicide Ziram to fathead minnows, (e) the Sacramento River Watershed Program's 1999 collection of water samples at 26 sites and use of bioassays employing *Ceriodaphnia dubia* and fathead minnow, (f) a 1997 CALFED Category III funded proposal by DeltaKeeper to conduct limited bioassay monitoring in the Delta, and (g) a USGS program to collect monthly pesticide data from the mainstem Sacramento River.

PESTICID.WPD
4 February 1998

Subject: Baseline Pesticide Monitoring

Background: The USGS has conducted detailed monitoring studies of pesticide concentrations in the Sacramento River, San Joaquin River, and the Delta. However, most of this monitoring has occurred during the low flow years of 1991-1994. More monitoring is needed during normal and wet years in order to gain a total picture of the waterbodies most at risk from pesticide exposure. This information is important for directing the initial implementation of Best Management Practices and for use as baseline information to evaluate their success.

In addition, the known problem pesticides do not account for all the toxicity that has been measured in bioassay organisms. Other pesticides undoubtedly contribute to the toxicity. It is not unreasonable that they have not been identified, since only half of the most commonly used pesticides have analytical methods that allow testing at ecologically significant levels.

A monitoring program is necessary to (a) evaluate the effectiveness of management practices that are being implemented to control known problem pesticides and to (b) identify new pesticides that are potentially causing toxicity problems.

Proposed Action: The Interagency Ecological Program's Contaminant Effects Group was formed at the request of Agency Directors; its mission is to acquire and disseminate information on the effects of contaminants on aquatic resources in the Central Valley and Estuary. The Contaminant Effects Group will be asked if they would like to develop a multi-year monitoring program to determine the sources, concentrations, and durations of pesticides in the mainstem Rivers and the Delta. Pesticides evaluated should include chemicals already identified as causing toxicity in surface water and sediment bioassays, as well as new chemicals used in large amounts in the watershed but for which inadequate information exists. Once the study has been designed by the Contaminant Effects Group, CALFED will use a focused grant program to determine the entity/entities which will conduct the work.

Geographic Area: The monitoring program would focus on the Delta, Sacramento River, San Joaquin River, and major tributaries.

Recommended Funding: \$500,000

Coordination/Overlap with Existing Studies: There is no comprehensive program that meets our needs. However, the results from this monitoring program would be integrated with those from specialized ongoing monitoring programs including: (a) the USGS' monitoring program to collect monthly pesticide data from the mainstem Sacramento River, (b) the Department of Pesticide Regulation's monitoring for dormant spray pesticides at two locations in the Sacramento River watershed and two locations in the San Joaquin watershed, (c) the Sacramento Coordinated Monitoring Program's monthly sample collection for pesticides upstream and

downstream of the Sacramento Regional Wastewater Treatment Plant, (d) the Sacramento River Watershed Program's 1999 collection of water samples at 26 sites and use bioassays employing *Ceriodaphnia dubia* and fathead minnow, and (e) a 1997 CALFED Category III funded proposal by DeltaKeeper to conduct limited bioassay monitoring in the Delta.

PESTICID.WPD
4 February 1998

Subject: Fathead Minnow Toxicity in the Sacramento River

Background: The fathead minnow bioassay is used as a surrogate to predict adverse impacts to the Sacramento River, San Joaquin River, and Delta. Toxicity testing in the Sacramento River watershed has detected a substantial amount of toxicity to this test species. Of particular concern is the fathead minnow mortality observed in approximately 50% of the samples collected from the Sacramento River near Freeport. The cause of this toxicity and its ecological significance needs to be determined. The fungicide Ziram has been identified as one potential toxicant; however, the seasonal distribution of toxicity suggests that it cannot account for all the toxicity. Studies are needed to determine the toxicants involved in the fathead minnow mortality and to determine the significance of the toxicant to the indigenous aquatic ecosystem.

Proposed Action: The Central Valley Regional Water Quality Control Board would coordinate the development of studies to determine the toxicants involved in the fathead minnow mortality and to characterize its presence in receiving waters. The studies would build on ongoing work by the Regional Board, DeltaKeeper, UC Davis, and the Sacramento River Watershed Program. After the toxicity is characterized, the ecological significance of the toxicity needs to be determined through the completion of an ecological risk assessment. The Regional Board will receive specific funding to develop and coordinate the studies; however, a focused grant process will be used to determine the entity/entities which will complete the actual field work and the ecological risk assessment.

Geographic Area: Monitoring would be conducted on the Sacramento River mainstem and tributaries, while the ecological risk assessment would encompass the entire Delta and appropriate upstream areas.

Recommended Funding: \$500,000

Coordination/Overlap with Existing Studies: The Regional Board will act as an umbrella organization to integrate the above program into ongoing studies and monitoring. These studies include: (1) an evaluation of the fungicide Ziram as a potential cause of mortality to fathead minnows. The study will develop a lab method to detect Ziram at ecologically relevant levels, develop toxicity identification procedures to finger Ziram, measure Ziram in field samples, and determine if Ziram can explain some of the observed fathead minnow mortality. (2) A Category III funded literature review to determine if contaminants are likely to be impacting salmonids. (3) A CALFED 1997 Category III funded proposal to study the effects of contaminants on Delta smelt. (4) In addition, the Sacramento River Watershed Program, Sacramento Regional County Sanitation District, and DeltaKeeper will continue to conduct fathead minnow bioassays as part of their specialized monitoring programs.

PESTICID.WPD
4 February 1998

Subject: Algal Toxicity

Background: Algae is at the base of the food chain. Toxicity surveys conducted by the Central Valley Regional Water Quality Control Board and DeltaKeeper have detected toxicity to the algal bioassay species in both agricultural and urban drainages, as well as on the mainstem Rivers and in the Delta. Past toxicity identification evaluations (TIEs) have identified diuron as a possible toxicant but indications are that more than one toxicant is responsible for the observed toxicity. The contaminants responsible for the algal toxicity need to be determined and the ecological significance defined. If specific chemicals are identified as ecologically significant, then programs can be developed to address them.

Proposed Action: The Central Valley Regional Water Quality Control Board would coordinate the development of studies to determine the cause of the observed toxicity and to characterize its presence in receiving waters. The studies would build on ongoing work by UC Davis and DeltaKeeper. After the toxicity is characterized, the ecological significance of the toxicity needs to be determined through the completion of an ecological risk assessment. The Regional Board will receive specific funding to develop and coordinate the studies; however, a focused grant process will be used to determine the entity/entities which will complete the actual field work and the ecological risk assessment.

Geographic Area: The initial focus would be the South Delta area affected by urban runoff.

Recommended Funding: \$500,000

Coordination/Overlap with Existing Studies: The Regional Board will act as an umbrella organization to integrate the above program into ongoing studies and monitoring such as that being conducted by DeltaKeeper and UC Davis.

PESTICID.WPD
4 February 1998

Subject: Water Quality Criteria for Chlorpyrifos and Diazinon

Background: CALFED's Water Quality Program Plan has identified chlorpyrifos and diazinon as pesticides that pose a threat to the Delta, and CALFED is supporting studies to both determine the impacts of pesticides on the Delta ecosystem and develop management practices to reduce the levels of these pesticides within the system.

The general actions that are required to resolve water quality problems associated with these two pesticides include (1) establishment of water quality objectives, (2) development of management practices that can be implemented to meet the targets, (3) completion of studies to determine potential ecological impacts, (4) establishment of mechanisms for assuring implementation of practices that reduce pesticide levels entering surface waters, and (5) implementation of a monitoring program to document the progress of reduction programs.

The proposed project is to complete the first general action required to resolve water quality problems associated with diazinon and chlorpyrifos, namely the development of final water quality criteria. Once these are established, management practice development and implementation will be greatly enhanced because the pesticide users will know exactly how much concentrations must be reduced in receiving waters.

The Department of Fish and Game has developed draft criteria documents for the pesticides chlorpyrifos and diazinon. The draft criteria are based on available data, and because there is a lack of data in some areas, the draft criteria include large safety factors. The Department has identified four studies that are necessary to fill the data gaps.

Proposed Action: Direct funding to the Department of Fish and Game for (a) completion of the four identified studies necessary to fill the data gaps and (b) completion of final criteria documents for diazinon and chlorpyrifos.

Geographic Area: Throughout the Sacramento-San Joaquin Delta system.

Recommended Funding: \$100,000.

Coordination: The Department will need to review any toxicity information for these two chemicals which has been developed since the publication of the draft criteria document.

PESTICID.WPD
4 February 1998

Subject: Chronic Fish Impairment Studies

Background: Riverine and Delta populations of phytoplankton, zooplankton, and many important fish species are in decline. The presence of elevated concentrations of pesticides, including chlorpyrifos and diazinon, in the Bay Delta poses a threat to the aquatic ecosystem. While these pesticide levels are not likely to be high enough to cause acute toxicity to fish, it is unknown what their chronic impacts may be on important fish species.

Although CALFED has funded projects to develop management practices to be used to reduce pesticide loading from agricultural and urban sources, a study of the effects of contaminants on Delta smelt, and a Delta bioassay-toxicity study, it is also necessary to fund a study to fill this important data gap. A monitoring and research program, combined with other ongoing and proposed studies, would provide a comprehensive analyses of contaminant effects on Delta fish populations.

Proposed Action: The proposed action is to implement a three-year monitoring and research program to evaluate the direct chronic impacts of contaminants, with an emphasis on pesticides, on important Delta fish species. Program elements should include (a) refinement of existing, or development of new, bioassay protocols for sensitive life history stages of important Delta fish, including splittail, Delta smelt, salmon, and striped bass, (b) seasonal bioassay screening at sites throughout the Delta and at selected upstream sites using species at appropriate life history stages to provide data on potential population level effects, and (c) toxicity evaluations to determine the toxicants responsible for observed toxicity. It is recommended that an expert panel develop the proposal for this study, and then a focused grant process be used to determine the entity/entities which will complete the actual research.

Geographic Area: The Delta would be the primary area of focus. Some work would need to be conducted upstream to account for the anadromous species.

Recommended Funding: \$700,000

Coordination/Overlap with Existing Studies: There is no comprehensive program that will provide the knowledge about the impact of chronic contaminant exposure to Delta fish species. This proposed research program should be coordinated with the CALFED funded studies by DeltaKeeper (toxicity-bioassays in the Delta), the proposed CALFED funded studies to determine the sources of toxicity to algae and invertebrates, and the ongoing Sacramento River Watershed Program's water quality testing.

PESTICID.WPD
4 February 1998

Subject: Integrated Pest Management in Suisun Bay

Background: The presence of elevated concentrations of pesticides, including diazinon and chlorpyrifos, in the Bay Delta poses a threat to the aquatic ecosystem. Pesticide loads entering the Bay Delta and its tributaries come from both agricultural and urban sources. In order to help address the problem, CALFED has funded projects to develop management practices to reduce pesticide loads from agricultural sources, and has funded a project to develop urban runoff pesticide management practices in the Sacramento County area.

Urban creeks in central Contra Costa County which drain to the Suisun Bay also contain pesticides at levels that are toxic to test organisms. These toxic waters are discharged into a critical portion of the Delta. It is recommended that a program be funded to develop best management practices to reduce pesticide concentration in urban runoff from central Contra Costa County.

Contra Costa County has been participating on the Bay Area/Sacramento Valley Urban Pesticide Committee and submitted a project proposal during CALFED's 1997 process. The Committee, which is made up of environmental groups, pesticide registrants, DPR, and other agency representatives, has developed an urban runoff control strategy. The previously funded Sacramento County urban runoff project, and this proposed Contra Costa County project, both implement the control strategy and complement each other. Both the Sacramento and Contra Costa proposals are viewed by the Urban Pesticide Committee as necessary demonstration projects and were ranked the highest by the CALFED Technical Review Panel. If this integrated pesticide management proposal by Contra Costa County is successful, it will serve as a model for other urban areas.

Proposed Action: Fund the 1997 proposal (number B236) which was submitted by the Central Contra Costa Sanitary District. This Integrated Pesticide Management Project builds on a pilot project which is currently underway. The Executive Summary is attached.

Geographic Area: Central Costa County and Suisun Bay

Recommended Funding: \$266,000

Coordination: The project would be implemented in cooperation with UC Cooperative Extension and the Contra Costa Clean Water Program. Coordination with other agencies would be accomplished through the existing Bay Area/Sacramento Valley Urban Pesticide Committee. This project will be closely coordinated with the Sacramento County urban runoff program (proposal number B217).

IPM.WPD
4 February 1998

Section I: Executive Summary

Title: IPM Partnership to Improve Water Quality in Suisun Bay and Local Creeks
Applicant: Central Contra Costa Sanitary District (CCCSD)

Project Description and Primary Biological/Ecological Objectives:

The proposed project seeks to reduce the presence of toxic pesticides in Suisun Bay and local creeks in central Contra Costa County through a broad-based community effort to increase the use of Integrated Pest Management (IPM) and expand awareness of the water quality impacts of pesticide misuse. IPM is a pest-management strategy which emphasizes non-chemical methods to keep pests at acceptably low levels.

The project expands a pilot project, now underway, to form partnerships with stores and with Master Gardeners to promote IPM. In addition, it would promote IPM through videos, publicity about IPM demonstration gardens, public agency IPM use, and an "eco-friendly" yard campaign. By reducing pesticide use, the project will improve water quality and aquatic habitat. Project materials will be made available to interested agencies throughout the Bay/Delta watershed for broader implementation.

Approach/Tasks/Schedule:

The project builds on an existing pilot project and uses existing vehicles (such as trained Master Gardeners) and store employees as a cost-effective, credible way to disseminate information. The project uses strategies designed to change behavior—not just raise awareness—by addressing barriers to using IPM (lack of products and practical information) and by changing community norms. It employs strategies drafted by the Bay Area Urban Pesticide Committee to address the environmental threat from pesticides. The following tasks are proposed:

1. Manage the project. This task includes coordinating/sharing with other agencies.
2. Work with additional stores/nurseries so they provide IPM information and products.
3. Expand the partnership with Master Gardeners to help them be an IPM resource.
4. Purchase and distribute a video about IPM.
5. Publicize IPM strategies used by existing public gardens.
6. Help change community norms through an "eco-friendly" yard campaign.
7. Train Pest Control Operators (PCOs) on IPM techniques.
8. Evaluate results, as summarized under "monitoring and data evaluation."

Tasks 1 through 5 and 8 will begin when the contract is signed and continue for three years. Tasks 6 and 7 will begin later, as shown on the schedule chart in the proposal body.

Justification for Project and Funding by CALFED:

CCCSD became aware of the need to reduce toxic pesticides entering the sewer system when it discovered that organophosphate pesticides (diazinon and chlorpyrifos) in its treated wastewater were killing the test organism *Ceriodaphnia dubia*. Other research has shown that diazinon is found in creeks throughout the Bay area, and during storm events, concentrations are often high enough to be toxic to some species of aquatic life. Similarly, urban creeks monitored in the Central Valley consistently show diazinon and chlorpyrifos levels that exceed Hazards Assessment criteria set by the Department of Fish and Game.

The Bay Area Urban Pesticide Committee, comprised of key stakeholders, concluded that the environmental threat from pesticide use warrants a widespread public outreach program, and drafted a pesticide education strategy. This proposal implements some of those strategies within central Contra Costa County. It will improve water quality in local creeks and in Suisun Bay, the discharge point for CCCSD's treated wastewater and, along with local creeks, the receiving water for central Contra Costa County's stormwater runoff.

Suisun Bay is a tidal perennial aquatic habitat and includes saline emergent wetlands habitat, priority habitats identified by the CALFED Bay-Delta program. The urban creeks provide instream aquatic habitat. The proposal addresses water quality, an identified stressor of the priority habitats and species. Diazinon and chlorpyrifos are listed as constituents of concern by the CALFED Water Quality Group.

Budget Costs and Third Party Impacts:

The total project cost is \$457,000, of which \$266,000 is requested from the CALFED Bay-Delta program. Because the project seeks to change pesticide use, it may affect the manufacturers/suppliers of pest-control products.

Applicant Qualifications:

CCCSD, the applicant and project lead, is a regional leader in pollution prevention, research, and public education. Project manager Bart Brandenburg, CCCSD's Pollution Prevention Superintendent, and assistant project managers Earlene Millier and Tim Tullis, have excellent track records in implementing grant-funded projects, including the pilot project on which this project builds.

This project will be implemented in cooperation with the University of California Cooperative Extension Master Gardeners and the Contra Costa Clean Water Program. Coordination will occur with additional agencies through the Urban Pesticide Committee and other forums. In addition, the project team includes IPM experts: The Bio-Integral Resource Center (BIRC) and Baefsky & Associates. It also includes Janet Cox and Associates and her sub-consultant Tucker and Associates, consultants with extensive experience in pollution-prevention education.

Monitoring and Data Evaluation:

CCCSD proposes to undertake the following monitoring/project evaluation steps:

1. Prepare quarterly reports to describe progress during the grant.
2. Track project participation (such as how many Master Gardeners were trained).
3. Request feedback from participants (such as through workshop evaluation forms).
4. Collect pesticide sales information from participating stores.
5. Measure public awareness through a follow-up survey to a 1994 baseline survey.
6. Continue to periodically evaluate the toxicity of its effluent and the presence of diazinon and chlorpyrifos in its influent and effluent.

Local Support/Coordination/Compatibility with CALFED objectives:

The project implements significant elements of the Urban Pesticide Committee's draft pesticide education strategy. Throughout the grant, CCCSD will coordinate with that committee as well as other groups (see page 7). The project supports the CALFED water quality objective and does not foreclose any CALFED restoration options.

Focused Grant

Subject: Sediment Reuse and Toxicity Criteria

Background: Although preliminary surveys have indicated that Delta sediments are contaminated by metals, pesticides, PAHs, and PCBs, there is insufficient data to adequately evaluate the distribution and associated effects of these sediment-bound contaminants. It is likely that sediment contaminants will be remobilized during levee repair and construction; the remobilized contaminants may impact sediment and water column species through direct effects and/or through bioaccumulation within the Delta foodweb.

Proposed Action: Research is to be conducted on two main issues: first, a determination of whether Delta sediments are toxic to various components of the aquatic ecosystem, and second, a determination of the beneficial reuse options for various types of Delta sediment. The Delta Levees and Habitat Advisory Committee will be asked to develop a process and a list of ideas to address the above issues, and then a focused grant program will be used to select the actual projects and award the funding.

Geographic Area: Delta

Recommended Funding: \$500,000

Coordination: Projects should be coordinated with the Delta Levees and Habitat Advisory Committee, CDWR, ACOE, and local groups.

SEDIMENT.WPD
Feb 4, 1998

Designated Action

Subject: Water Acquisition

Background: The Integration Panel has identified instream flows and hydrograph alterations as a high priority for all priority species. Alterations of the hydrograph can have wide ranging effects on biological resources through changes in quantity and quality of habitat, changes in water depths, temperatures, velocities, and quality, through changes in sediment transport and through changes in riparian habitat.

Proposed Action: Actions are being discussed and information will be presented at the Roundtable meeting on this item.

Geographic Area: Throughout the entire Sacramento-San Joaquin Delta system.

Recommended Funding: \$20,000,000

Coordination: Coordination is critical to the success of this action. This coordination is needed with the CVPIA water acquisition program, local interests, local and statewide water users, and many of the other interests involved in this issue.

4 February 1998
WATER.WPD